

Module Name	Biogeochemistry of Marine Sediments I	
Module Number	MNF-bioc-251	
Person in Charge	Dr. Stefan Krause Phone: +49 (0)431 600-2839, Email: skrause@geomar.de Prof. Dr. Klaus Wallmann Phone: +49-(0)431-600-2287, E-mail: kwallmann@geomar.de	
Semester / Duration	2. semester / one semester	Status optional
Regular Cycle	annual, in summer semester	
Study Programme	Master of Science in Biological Oceanography	
Classes	Class Title (Teaching Form) Lecturers	Contact Time / Group Size
	<u>Biogeochemistry of Marine Sediments I</u> (Lecture) Dr. Stefan Krause Prof. Dr. Klaus Wallmann	2 hrs per week / 30 students
Credit Points / Workload	4 ECTS / 120 hours	
Prerequisites	A bachelor's degree in a biological, geological or chemical discipline.	
Completion Module	None.	
Following Module	MNF-bioc-356.	
Educational Objectives	In this module students will learn basic microbial reactions that are connected to biodegradation, element cycling, and synthesis in marine sediments. After completion of the module students should be familiar with the principles of microbial redox reactions and able to interpret for example geochemical gradients that are shaped through biological activity. Furthermore the module offers an interdisciplinary basis to understand biogeochemical processes in benthic environments.	
Content of Teaching	This module provides a comprehensive overview of microbial processes at the interface between the marine biosphere and geosphere. Topics will include redox reactions in oxygenated and reduced sediments (e.g. nitrate reduction, sulfate reduction, methanogenesis, and methane oxidation), element cycling, microbial photosynthesis, chemosynthesis, nitrogen fixation, fermentation, and isotope fractionation. The subject will be taught with examples from a variety of marine settings reaching from coastal to deep-sea as well as from polar to tropical environments.	
Examination	Manuscript 100%	
Literature	Canfield et al.: "Advances in Marine Biology: Aquatic Geomicrobiology", Elsevier, ISBN: 0-12-026147-2; Konhauer: "Introduction to Geomicrobiology", Blackwell, ISBN: 0-632-05454-9; Schulz et al.: "Marine Geochemistry", Springer, ISBN: 3-540-66453-X	
Additional Information	This lecture is interdisciplinary and addresses students from the fields of biological oceanography, geochemistry, and microbiology. The lecture will be given regularly every week.	